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METEOROLOGICAL DATA REPORT

NIKE-HYDAC STV (SR-46 and 47)
(24 January 1967)

BY

JOHN M. SHARPE

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, NEW MEXICO

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ECOM

UNITED STATES ARMY ELECTRONICS COMMAND

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DA Task IV650212A127-02

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ABSTRACT

Meteorological data gathered for the launching of two (2) Nike-Hydrac STV (SR 46 and 47) are presented for the Ballistic Systems Division, U.S. Air Force and for ballistic studies. The data appear, along with calculated ballistic data, in tabular form.

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INTRODUCTION

Two Nike-Hydac STV (SR-46 and 47) were launched from Launch Complex 33/L-314 White Sands Missile Range (WSMR), New Mexico on 24 January 1967.

Nike-Hydac STV (SR-46) was launched at 1100 MST.

Nike-Hydac STV (SR-47) was launched at 1329 MST.

Meteorological data used in conjunction with theoretical calculations to predict rocket impact were collected by the Meteorological Support Division, Atmospheric Sciences Laboratory (ASL), WSMR, New Mexico. The Ballistics Meteorologists for this firing were John M. Sharpe and SFC Glen E. Hudson.

DISCUSSION

Wind data for the first 216 feet above the surface were obtained from a system composed of 5 Aerovanes mounted on a 200-foot tower and cabled to component wind indicators.

From 216 to 4000 feet above the surface, wind data were obtained from T-9 RADAR observed balloon ascents.

Temperature, pressure and humidity data, along with upper wind data from 4000 to 100,000 feet above the surface, were obtained from standard rawinsonde observations.

Mean wind component values in each ballistic zone were determined from vertical cross sections by the equal-area method.

Theoretical rocket performance values and ballistic factors as a function of altitude were provided by ASL and are the basis for data appearing in Tables VIII and IX.

PAYLOAD		233.0	Pounds
CORLIOLIS DISPLACEMENT	WEST	4.9	Miles
SECOND-STAGE IGNITION	TIME	20.0	Seconds
	ALTITUDE	36,691	Feet NSL
PEAK	TIME	232.0	Seconds
	ALTITUDE	693,948	Feet NSL
UNIT WIND EFFECT	HEAD	2.3815	Miles/MPH
	GROSS	2.4678	Miles/MPH
	TAIL	2.3815	Miles/MPH
TOWER TILT EFFECT		13.83	Miles/Degree

TABLE I. THEORETICAL ROCKET PERFORMANCE VALUES

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
11- 60	.1440
60- 108	.0966
108- 148	.0629
148- 184	.0502
184- 216	.0286
216- 300	.0724
300- 400	.0533
400- 600	.0752
600- 800	.0537
800-1000	.0400

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
1000- 1400	.0535
1400- 2000	.0575
2000- 2500	.0288
2500- 3000	.0195
3000- 3500	.0112
3500- 4000	.0073
4000- 4253	.0012
4253- 8000	-.0135
8000-15000	-.0147
15000-21000	-.0166

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
21000-26000	-.0102
26000-32691	-.0110
32691-54000	.0430
34000-36000	.0411
36000-41000	.0343
41000-46000	.0259
46000-51000	.0154
51000-56000	.0092
56000-61000	.0060
61000-66000	.0040
66000-72168	.0030

TABLE II. BALLISTIC FACTORS

AERO- VANE NO. #	MEAN WIND COMPONENTS IN MILES PER HOUR											
	15		16		17		18		MST		MST	
	1305 MST		1315 MST		1320 MST		1325 MST		N-S		E-W	
	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
1	3.08	2.08	6.08	4.08	8.08	6.08	2.08	2.08				
2	3.0	2.0	6.0	4.0	8.0	6.0	4.0	4.0				
3	4.0	2.0	6.0	4.0	8.0	6.0	4.0	4.0				
4	4.0	2.0	6.0	4.0	8.0	6.0	4.0	4.0				
5	2.0	2.0W	6.0	2.0	8.0	4.0	4.0	4.0				

TABLE III. ANEMOMETER WIND SPEED AND DIRECTION, (Cont)

* Heights corresponding to Aerovane Numbers: 1 = 35 Feet 3 = 120 Feet 5 = 200 Feet
2 = 80 Feet 4 = 160 Feet

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN MILES PER HOUR											
	1		2		3		4		5		6	
	0900 MST		0915 MST		0930 MST		1000 MST		1015 MST		1030 MST	
	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
216- 300	19.0N	0.5E	22.0N	3.0E	20.0N	1.5E	16.0N	3.5E	11.0N	5.5E	8.0N	0.0
300- 400	18.0	1.5	21.0	4.0	21.0	0.0	11.0	6.0	10.0	11.0	8.0	1.5E
400- 600	17.0	2.0	24.0	7.0	22.0	1.5E	14.0	9.0	13.0	13.0	10.0	5.0
600- 800	16.0	3.5	20.0	5.0	16.0	4.0	19.0	7.0	8.5	8.0	8.0	6.0
800-1000	17.0	4.0	18.0	2.0	8.0	3.0	15.0	2.0	4.0	3.5W	6.0	7.0
1000-1400	14.0	3.0W	9.0	3.0W	6.0	4.0	6.0	3.0W	4.0	7.0	7.0	3.0W
1400-2000	16.0	15.0	14.0	15.0	6.0	10.0W	2.0	9.0	4.0	13.5	6.0	12.0
2000-2500	11.0	25.0	12.0	24.0	6.0	23.0	6.0	13.0	2.0	23.0	5.0	20.0
2500-3000	0.0	26.0	2.0E	31.0	0.0	28.0	2.0	24.0	4.0	30.0	2.0	25.0
3000-3500	2.0E	28.0	1.0	33.0	2.0E	30.0	3.0E	30.0	2.0	30.0	1.0E	29.0
3500-4000	0.0	34.0	6.0	30.0	4.0	35.0	6.0	31.0	0.0	32.0	3.0	34.0
											4.5N	2.5E
											3.0	3.0
											2.5	4.5
											3.0	4.0
											7.0	5.0
											6.0	6.0
											4.0	8.0W
											8.0	17.0
											4.0	30.0
											3.0E	29.0
											6.0	31.0

TABLE IV. PILOT-BALLOON-MEASURED WIND DATA
NIKE-HYDAC STV (SR-46)

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN MILES PER HOUR													
	8		9		10		11		12		13		14	
	1050 MST		1100 MST		1145 MST		1215 MST		1230 MST		1245 MST		1255 MST	
	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
216- 300	1.0N	2.0E	2.0S	3.0E	2.5S	0.0	3.0S	1.0W	4.0S	2.0W	8.0S	1.0E	3.0S	1.5E
300- 400	0.0	2.0	3.0	5.0	6.0	3.0E	5.0	2.0	3.0	1.5	8.0	2.0	5.0	5.0
400- 600	2.0N	3.0	2.0	4.0	8.0	2.0	5.0	1.0	3.0	1.0	7.0	5.0	5.0	5.0
600- 800	0.0	4.0	0.0	4.0	6.0	3.0	5.0	1.0	4.0	0.0	6.0	6.0	5.0	5.0
800-1000	1.0S	2.0	1.0N	5.0	4.0	2.0	4.0	1.0	5.0	1.0W	4.0	6.0	3.0	3.0
1000-1100	4.0N	2.0	0.0	4.0	3.0	0.0	4.0	3.0	3.0	2.0	3.0	0.0	0.0	2.0W
1100-2000	2.0	4.0W	0.0	3.0W	4.0N	6.0W	1.0	4.0	0.5W	9.0	1.0	0.0	3.0N	7.0
2000-2500	2.0S	10.0	2.0S	11.5	6.0	15.0	2.0N	11.0	0.0	13.0	2.0N	5.0W	4.0	7.0
2500-3000	0.0	17.5	3.0	17.0	6.0	21.0	5.0	16.0	4.0N	20.0	6.0	14.0	5.0	10.0
3000-3500	3.0N	31.0	4.0N	28.0	0.0	20.0	4.0	22.0	4.0	20.0	0.0	14.0	1.0	20.0
3500-4000	0.0	26.0	2.0	30.0	3.0S	26.0	0.0	24.0	4.0	22.0	0.5W	28.0	1.0S	24.0

TABLE IV. PILOT-BALLOON-MEASURED WIND DATA, (Cont)
NIFE-HYDAC STV (SR-16 and SR-47)

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN MILES PER HOUR									
	15 1305 MST		16 1315 MST		17 1320 MST		18 1330 MST		19 1345 MST	
	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
216- 300	2.5S	4.0E	5.0S	2.5E	4.5N	5.0E	4.5S	4.5E		
300- 400	4.0	9.0	3.0	3.0	0.0	4.5	4.5	5.5		
400- 600	6.0	8.0	4.0	6.0	1.0S	3.0	5.0	6.0		
600- 800	8.0	4.0	3.0	6.0	2.0N	3.0	4.0	4.5		
800-1000	9.0	7.0	2.0	7.0	1.0S	0.0	3.0	3.0		
1000-1400	8.0	2.0	4.0	4.0	1.5	0.0	1.0N	0.0		
1400-2000	1.0	0.0	1.0N	3.0W	2.0N	2.0W	0.0	0.0		
2000-2500	4.0N	3.0W	1.0	5.0	2.0	3.0	1.0S	4.0W		
2500-3000	1.0	8.0	3.0	10.0	0.0	6.0	2.0N	9.0		
3000-3500	0.0	20.0	7.0	17.0	0.0	20.0	1.0	16.0		
3500-4000	2.0S	30.0	6.0	33.0	1.0S	26.0	2.0S	23.0		

TABLE IV. PILOT-BALLOON-MEASURED WIND DATA, (Cont)
NIKE-HYDAC STV (SR-47)

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN KNOTS					
	1 0840 MST		2 1100 MST		3 * 1329 MST	
	N-S	E-W	N-S	E-W	N-S	E-W
4000-4253	0.0	30.0W	4.0S	22.5W	*	*
4253-9000	0.0	32.0	5.5	30.5		
9000-15000	8.0S	44.5	7.0	39.5		
15000-21000	7.0	38.5	7.0	40.5		
21000-26000	0.0	47.0	15.5	43.0		
26000-32691	11.0S	61.0	9.5	54.0		
32691-34000	0.0	45.0	10.0	57.0		
34000-36000	16.0S	44.0	18.5	50.5		
36000-41000	18.0	50.0	19.5	53.5		
41000-46000	14.0	38.5	19.5	53.5		
46000-51000	16.5	45.0	13.5	36.5		
51000-56000	15.5	43.0	19.5	34.0		
56000-61000	16.5	20.0	14.0	24.0		
61000-66000	7.0	8.5	7.5	12.0		
66000-74168	0.0	7.5	5.0N	8.5E		

TABLE V. RAWINSONDE-MEASURED WIND DATA

* - Balloon Burst Below 15,000 Feet MSL.

STATION ALTITUDE 3989.0 FEET MSL
24 JAN. 67 0840 HRS MST
ASCENSION NO. 46

UPPER AIR DATA
0078003907
WHIWE SANDS SITE
TABLE VI

WSTM SITE COORDINATES
E 182.580 FEET
N 185.045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES	DEWPOINT CENTIGRADE	REL-HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
3989.0	881.0	5.3	-6.0	44.0	1100.5	650.3	30.0	8.0	1.000264
4000.0	880.6	5.3	-6.2	43.4	1100.1	650.3	29.4	8.0	1.000264
4500.0	864.4	5.8	-11.8	27.0	1078.7	650.6	3.8	11.8	1.000232
5000.0	848.5	6.6	-11.1	27.0	1053.4	651.7	338.1	15.6	1.000248
5500.0	832.7	5.9	-11.7	27.0	1038.5	650.8	312.4	19.3	1.000244
6000.0	817.3	5.0	-12.4	27.0	1022.5	649.8	286.7	23.1	1.000239
6500.0	802.1	4.2	-13.2	27.0	1006.7	648.8	279.5	25.6	1.000235
7000.0	787.2	3.3	-14.0	27.0	991.2	647.7	274.3	27.8	1.000231
7500.0	772.6	2.4	-14.7	27.0	975.9	646.7	271.6	29.0	1.000227
8000.0	758.3	2.0	-15.4	26.4	959.4	646.1	269.1	30.2	1.000223
8500.0	744.1	2.6	-16.0	24.0	939.5	646.9	266.9	31.4	1.000218
9000.0	730.2	2.4	-16.3	23.7	922.3	646.7	265.3	31.4	1.000214
9500.0	716.4	1.6	-16.4	25.0	907.7	645.7	265.2	30.4	1.000211
10000.0	703.0	0.8	-16.5	26.2	893.3	644.7	265.4	29.3	1.000208
10500.0	689.7	-0.1	-16.7	27.5	879.2	643.8	267.6	30.0	1.000204
11000.0	676.8	-0.9	-16.9	28.7	865.3	642.8	269.7	30.7	1.000201
11500.0	664.0	-1.7	-17.1	30.0	851.6	641.8	271.2	33.3	1.000198
12000.0	651.5	-2.4	-17.3	30.9	837.6	641.0	272.4	36.1	1.000195
12500.0	639.1	-2.4	-17.5	30.4	821.7	641.0	270.2	40.1	1.000191
13000.0	627.0	-2.6	-17.9	29.9	806.6	640.8	268.0	43.4	1.000187
13500.0	614.8	-3.7	-19.1	29.5	794.4	639.4	265.8	45.5	1.000184
14000.0	602.9	-4.9	-20.2	29.0	782.3	638.0	264.0	45.6	1.000181
14500.0	591.1	-6.0	-21.4	28.5	770.4	636.7	262.5	44.5	1.000177
15000.0	579.7	-7.1	-22.6	28.0	758.7	635.3	262.3	44.5	1.000174
15500.0	568.4	-8.3	-23.8	27.6	747.2	633.9	262.3	44.7	1.000171
16000.0	557.4	-9.4	-25.0	27.1	735.8	632.6	262.4	45.3	1.000168
16500.0	546.5	-10.5	-26.1	26.6	724.7	631.2	262.4	45.6	1.000165
17000.0	535.9	-11.6	-27.3	26.1	713.7	629.8	261.8	46.2	1.000163
17500.0	525.5	-12.8	-28.5	25.7	702.9	628.4	261.3	46.5	1.000160
18000.0	515.3	-13.9	-29.7	25.2	692.3	627.1	261.5	47.2	1.000157

STATION ALTITUDE 3989.0 FEET MSL
24 JAN. 67 0840 HRS MST
ASCENSION NO. 46

UPPER AIR DATA
0078003907
WHITE SANDS SITE
TABLE VI (Cont)

UPPER AIR DATA
0078003907
WHITE SANDS SITE
TABLE VI (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES C	TEMPERATURE DEWPOINT C	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
18500.0	505.2	-14.9	-30.3	25.7	681.3	625.8	261.6	47.7	1.000155
19000.0	495.1	-15.8	-30.6	27.0	670.1	624.7	261.0	46.3	1.000152
19500.0	485.2	-16.7	-30.9	28.3	659.0	623.6	261.0	44.9	1.000149
20000.0	475.3	-17.8	-31.6	29.0	648.3	622.3	262.1	43.5	1.000147
20500.0	465.3	-19.1	-32.7	29.1	637.9	620.8	262.9	41.3	1.000144
21000.0	455.6	-20.4	-33.8	29.2	627.8	619.2	263.3	38.4	1.000142
21500.0	446.1	-21.6	-34.9	29.2	617.8	617.6	264.7	36.9	1.000139
22000.0	436.8	-22.9	-36.1	29.3	608.0	616.0	266.7	36.2	1.000137
22500.0	427.6	-24.2	-37.2	29.3	598.3	614.5	268.8	35.9	1.000135
23000.0	418.7	-25.5	-38.3	29.4	588.9	612.9	270.8	35.8	1.000133
23500.0	410.0	-26.7	-39.4	29.5	579.6	611.3	271.4	37.2	1.000130
24000.0	401.4	-28.0	-40.5	29.5	570.4	609.7	271.7	39.0	1.000128
24500.0	393.0	-29.3	-41.6	29.6	561.4	608.1	271.1	41.6	1.000126
25000.0	384.8	-30.6	-42.8	29.7	552.6	606.5	270.1	44.4	1.000124
25500.0	376.7	-31.9	-43.9	29.7	543.9	604.9	268.5	46.9	1.000122
26000.0	368.9	-33.1	-45.0	29.8	535.4	603.3	266.3	49.0	1.000120
26500.0	361.1	-34.4	-46.1	29.8	527.0	601.7	264.5	50.5	1.000118
27000.0	353.6	-35.7	-47.2	29.9	518.8	600.1	264.1	50.2	1.000116
27500.0	346.2	-37.0	-48.4	30.0	510.7	598.4	263.7	49.9	1.000114
28000.0	338.6	-38.2	-50.1	28.1**	502.5	596.8	262.4	48.6	1.000112
28500.0	331.3	-39.6	-52.7	23.5**	494.1	595.1	261.2	47.4	1.000110
29000.0	323.9	-40.9	-55.6	19.0**	485.8	593.5	260.2	46.6	1.000108
29500.0	316.7	-42.2	-58.9	14.4**	477.7	591.8	259.3	46.0	1.000107
30000.0	309.7	-43.5	-62.9	9.9**	469.8	590.1	259.3	48.4	1.000105
30500.0	302.8	-44.8	-68.4	5.3**	462.0	588.4	259.6	51.7	1.000103
31000.0	296.1	-46.1	-81.9	0.8**	454.3	586.7	260.1	54.0	1.000101
31500.0	289.3	-47.3	0.	-0. **	446.3	585.1	260.8	56.1	1.000099
32000.0	282.6	-48.6	0.	-0. **	438.4	583.5	262.8	59.6	1.000098
32500.0	276.1	-49.8	0.	-0. **	430.6	582.0	264.4	62.6	1.000096
33000.0	269.7	-51.0	0.	-0. **	423.0	580.4	263.9	62.1	1.000094

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
24 JAN. 67 0840 HRS MST
ASCENSION NO. 46

UPPER AIR DATA
0078003907
WHITE SANDS SITE
TABLE VI (Cont)

WSEN SITE COORDINATES
E 488,560 FEET
N 183,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT CENTIGRADE				DIRECTION DEGREES(TN)	SPEED KNOTS	
33500.0	263.4	-52.2	0.	-0. **	415.5	578.7	263.6	63.7	1.000093
34000.0	257.3	-53.5	0.	-0. **	408.1	577.1	263.6	69.1	1.000091
34500.0	251.4	-54.7	0.	-0. **	400.9	575.5	263.3	70.5	1.000089
35000.0	245.6	-55.9	0.	-0. **	393.9	573.9	262.8	67.7	1.000088
35500.0	239.9	-57.1	0.	-0. **	386.8	572.4	263.6	65.7	1.000086
36000.0	234.2	-58.0	0.	-0. **	379.2	571.2	265.1	64.0	1.000084
36500.0	228.6	-58.9	0.	-0. **	371.7	569.9	266.0	54.7	1.000083
37000.0	223.1	-57.5	0.	-0. **	360.6	571.7	266.8	49.3	1.000080
37500.0	217.8	-58.2	0.	-0. **	353.0	570.8	265.1	48.4	1.000079
38000.0	212.5	-59.0	0.	-0. **	345.8	569.8	263.5	47.5	1.000077
38500.0	207.4	-59.8	0.	-0. **	338.6	568.8	258.2	47.9	1.000075
39000.0	202.4	-60.5	0.	-0. **	331.7	567.8	252.9	48.3	1.000074
39500.0	197.5	-61.3	0.	-0. **	324.8	566.8	247.2	49.9	1.000072
40000.0	192.8	-62.0	0.	-0. **	318.2	565.7	241.5	51.8	1.000071
40500.0	188.1	-62.8	0.	-0. **	311.6	564.7	239.7	52.7	1.000069
41000.0	183.6	-63.5	0.	-0. **	305.1	563.8	238.9	53.4	1.000068
41500.0	179.1	-63.5	0.	-0. **	297.7	563.8	240.9	53.4	1.000066
42000.0	174.7	-63.5	0.	-0. **	290.4	563.8	244.1	53.3	1.000065
42500.0	170.5	-63.4	0.	-0. **	283.2	563.9	248.7	52.0	1.000063
43000.0	166.3	-62.9	0.	-0. **	275.6	564.6	254.1	50.0	1.000061
43500.0	162.3	-62.4	0.	-0. **	268.3	565.3	255.8	45.6	1.000060
44000.0	158.3	-62.3	0.	-0. **	261.6	565.4	255.2	39.7	1.000058
44500.0	154.5	-62.2	0.	-0. **	255.2	565.6	251.7	38.5	1.000057
45000.0	150.8	-62.1	0.	-0. **	248.9	565.6	247.3	38.9	1.000055
45500.0	147.1	-62.6	0.	-0. **	243.4	565.0	244.9	42.4	1.000054
46000.0	143.5	-63.1	0.	-0. **	238.1	564.3	243.0	44.4	1.000053
46500.0	140.0	-63.4	0.	-0. **	232.6	563.9	245.2	48.8	1.000052
47000.0	136.6	-63.0	0.	-0. **	226.5	564.4	249.4	53.9	1.000050
47500.0	133.3	-62.7	0.	-0. **	220.7	564.9	253.0	56.5	1.000049
48000.0	130.1	-62.3	0.	-0. **	214.9	565.4	255.7	54.7	1.000048

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

UPPER AIR DATA
0078003907
WHITE SANDS SITE
TABLE VI (Cont)

STATION ALTITUDE 3989.0 FEET MSL
24 JAN. 67 0840 HRS MST
ASCENSION NO. 46

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL-HUM. PERCENT	DENSITY GM/CUBIC MEYER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
48500.0	126.9	-61.9	-0. **	209.3	565.9	258.2	52.9	1.000047
49000.0	123.8	-61.5	-0. **	203.9	566.4	258.5	51.3	1.000045
49500.0	120.8	-61.2	-0. **	198.7	566.9	258.8	49.9	1.000044
50000.0	117.9	-61.6	-0. **	194.2	566.4	257.5	51.1	1.000043
50500.0	115.1	-61.9	-0. **	189.8	565.9	256.3	52.4	1.000042
51000.0	112.3	-62.3	-0. **	185.5	565.5	256.2	53.3	1.000041
51500.0	109.5	-62.6	-0. **	181.3	565.0	256.2	54.2	1.000040
52000.0	106.9	-62.0	-0. **	176.4	565.8	256.1	54.3	1.000039
52500.0	104.3	-60.7	-0. **	171.1	567.6	255.9	54.0	1.000038
53000.0	101.8	-60.6	-0. **	166.9	567.7	254.3	52.1	1.000037
53500.0	99.4	-60.5	-0. **	162.8	567.8	250.6	47.6	1.000036
54000.0	97.0	-60.5	-0. **	158.9	567.8	246.7	43.5	1.000035
54500.0	94.6	-60.4	-0. **	155.0	567.9	242.3	43.5	1.000035
55000.0	92.4	-60.3	-0. **	151.2	568.0	237.8	43.4	1.000034
55500.0	90.1	-60.4	-0. **	147.6	568.0	236.9	43.5	1.000033
56000.0	88.0	-60.5	-0. **	144.1	567.8	236.6	43.6	1.000032
56500.0	85.9	-60.6	-0. **	140.8	567.6	239.3	44.9	1.000031
57000.0	83.8	-60.8	-0. **	137.5	567.4	243.2	46.7	1.000031
57500.0	81.8	-60.9	-0. **	134.2	567.2	246.5	47.1	1.000030
58000.0	79.8	-61.1	-0. **	131.1	567.0	249.3	46.4	1.000029
58500.0	77.9	-61.2	-0. **	128.0	566.8	250.8	43.7	1.000029
59000.0	76.0	-61.4	-0. **	125.0	566.6	250.3	38.2	1.000028
59500.0	74.2	-61.5	-0. **	122.1	566.4	248.9	33.7	1.000027
60000.0	72.4	-61.7	-0. **	119.2	566.3	244.5	32.4	1.000027
60500.0	70.6	-61.6	-0. **	116.4	566.3	239.8	30.8	1.000026
61000.0	68.9	-61.6	-0. **	113.5	566.4	227.7	23.1	1.000025
61500.0	67.3	-61.5	-0. **	110.7	566.5	215.6	15.4	1.000025
62000.0	65.6	-61.4	-0. **	108.0	566.6	218.7	18.2	1.000024
62500.0	64.1	-61.4	-0. **	105.4	566.6	224.2	22.8	1.000023
63000.0	62.5	-61.3	-0. **	102.8	566.7	224.5	22.1	1.000023

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
24 JAN. 67 0840 HRS MST
ASCENSION NO. 46

UPPER AIR DATA
0078003907
WHITE SANDS SITE
TABLE VI (Cont)

MSM SITE COORDINATES
E 488,580 FEET
N 185,043 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND		WIND DATA		INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT CENTIGRADE			KNITS	KNITS	DIRECTION DEGREES(TN)	SPEED KNOTS	
63500.0	61.0	-61.2	0.	-0. **	100.3	566.8	222.4	222.4	16.8	1.000022
64000.0	59.5	-61.2	0.	-0. **	97.9	566.9	217.9	217.9	14.9	1.000022
64500.0	58.1	-61.1	0.	-0. **	95.5	567.0	210.7	210.7	10.1	1.000021
65000.0	56.7	-61.0	0.	-0. **	93.2	567.1	203.4	203.4	5.4	1.000021
65500.0	55.3	-61.0	0.	-0. **	90.9	567.2	158.9	158.9	9.2	1.000020
66000.0	54.0	-60.9	0.	-0. **	88.7	567.3	114.5	114.5	13.0	1.000020
66500.0	52.7	-60.8	0.	-0. **	86.5	567.4	82.9	82.9	19.5	1.000019
67000.0	51.4	-60.8	0.	-0. **	84.4	567.5	80.3	80.3	32.2	1.000019
67500.0	50.2	-60.7	0.	-0. **	82.3	567.6	77.6	77.6	44.8	1.000018
68000.0	49.0	-60.6	0.	-0. **	80.3	567.7	71.8	71.8	41.0	1.000018
68500.0	47.8	-60.5	0.	-0. **	78.4	567.7	64.1	64.1	26.8	1.000017
69000.0	46.7	-60.4	0.	-0. **	76.4	567.9	56.4	56.4	12.6	1.000017
69500.0	45.6	-60.1	0.	-0. **	74.5	568.4	4.1	4.1	14.7	1.000017
70000.0	44.5	-59.7	0.	-0. **	72.6	568.8	306.9	306.9	18.7	1.000016
70500.0	43.5	-59.4	0.	-0. **	70.8	569.3	258.5	258.5	23.9	1.000016
71000.0	42.4	-59.1	0.	-0. **	69.1	569.7	259.6	259.6	36.7	1.000015
71500.0	41.4	-58.7	0.	-0. **	67.3	570.2	260.7	260.7	49.4	1.000015
72000.0	40.5	-58.4	0.	-0. **	65.6	570.6	260.1	260.1	53.0	1.000015
72500.0	39.5	-58.1	0.	-0. **	64.0	571.1	257.0	257.0	42.6	1.000014
73000.0	38.6	-57.7	0.	-0. **	62.4	571.5	253.8	253.8	32.1	1.000014
73500.0	37.7	-57.4	0.	-0. **	60.8	572.0	295.5	295.5	24.0	1.000014
74000.0	36.8	-57.0	0.	-0. **	59.3	572.4	358.9	358.9	17.1	1.000013
74500.0	35.9	-56.7	0.	-0. **	57.8	572.9	61.6	61.6	10.3	1.000013
75000.0	35.1	-56.4	0.	-0. **	56.4	573.3	68.0	68.0	11.7	1.000013
75500.0	34.2	-56.0	0.	-0. **	55.0	573.7	74.4	74.4	13.2	1.000012
76000.0	33.4	-55.7	0.	-0. **	53.6	574.2	80.4	80.4	13.0	1.000012
76500.0	32.7	-55.4	0.	-0. **	52.2	574.6	85.5	85.5	10.1	1.000012
77000.0	31.9	-55.0	0.	-0. **	50.9	575.1	90.7	90.7	7.2	1.000011
77500.0	31.1	-54.7	0.	-0. **	49.7	575.5	136.8	136.8	6.1	1.000011
78000.0	30.4	-54.4	0.	-0. **	48.4	576.0	199.6	199.6	5.8	1.000011

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

UPPER AIR DATA
0078003907
WHITE SANDS SITE
TABLE VI (Cont)

STATION ALTITUDE 3989.0 FEET MSL
24 JAN. 67 0840 HRS MST
ASCENSION NO. 46

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
78500.0	29.7	-54.0	-0. **	47.2	576.4	258.1	5.5	1.000011
79000.0	29.0	-53.7	-0. **	46.0	576.8	251.6	5.3	1.000010
79500.0	28.3	-53.4	-0. **	44.9	577.3	245.0	5.1	1.000010
80000.0	27.6	-53.0	-0. **	43.8	577.7	252.3	4.5	1.000010
80500.0	27.0	-52.7	-0. **	42.7	578.2	279.4	3.3	1.000009
81000.0	26.4	-52.3	-0. **	41.6	578.6	306.4	2.1	1.000009
81500.0	25.7	-52.0	-0. **	40.6	579.0	345.3	5.4	1.000009
82000.0	25.1	-51.7	-0. **	39.5	579.5	27.8	10.0	1.000009
82500.0	24.6	-51.5	-0. **	38.6	579.7	66.5	14.4	1.000009
83000.0	24.0	-51.4	-0. **	37.7	579.8	63.6	15.6	1.000008
83500.0	23.4	-51.3	-0. **	36.8	579.9	60.8	16.9	1.000008
84000.0	22.9	-51.2	-0. **	36.0	580.0	60.5	17.7	1.000008
84500.0	22.4	-51.2	-0. **	35.1	580.2	64.3	17.9	1.000008
85000.0	21.9	-51.1	-0. **	34.3	580.3	68.1	18.0	1.000008
85500.0	21.4	-51.0	-0. **	33.5	580.4	70.5	18.2	1.000007
86000.0	20.9	-50.9	-0. **	32.7	580.5	72.3	18.3	1.000007
86500.0	20.4	-50.8	-0. **	31.9	580.6	74.1	18.4	1.000007
87000.0	19.9	-50.7	-0. **	31.2	580.8	74.4	18.7	1.000007
87500.0	19.5	-50.6	-0. **	30.5	580.9	74.5	19.1	1.000007
88000.0	19.0	-50.4	-0. **	29.8	581.1	74.4	19.9	1.000007
88500.0	18.6	-50.3	-0. **	29.1	581.3	73.7	22.4	1.000006
89000.0	18.2	-50.1	-0. **	28.4	581.5	73.0	24.8	1.000006
89500.0	17.8	-49.9	-0. **	27.7	581.8	72.3	25.3	1.000006
90000.0	17.3	-49.8	-0. **	27.1	582.0	71.6	22.9	1.000006
90500.0	17.0	-49.6	-0. **	26.4	582.2	70.9	20.5	1.000006
91000.0	16.6	-49.4	-0. **	25.8	582.4	71.7	21.0	1.000006
91500.0	16.2	-49.3	-0. **	25.2	582.6	73.6	23.7	1.000006
92000.0	15.8	-49.1	-0. **	24.6	582.8	75.5	26.3	1.000005
92500.0	15.5	-48.9	-0. **	24.0	583.1	76.8	25.7	1.000005
93000.0	15.1	-48.8	-0. **	23.5	583.3	77.8	24.1	1.000005

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
24 JAN. 67 0840 HRS MST
ASCENSION NO. 46

UPPER AIR DATA
0078003907
WHITE SANDS SITE
TABLE VI (Cont)

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE HILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
93500.0	14.6	-48.6	-0. **	22.9	583.5	78.9	22.5	1.000005
94000.0	14.4	-48.4	-0. **	22.4	583.7	79.0	22.8	1.000005
94500.0	14.1	-48.3	-0. **	21.9	583.9	79.0	23.2	1.000005
95000.0	13.8	-48.1	-0. **	21.3	584.1	79.2	23.4	1.000005
95500.0	13.5	-47.9	-0. **	20.8	584.3	80.7	21.3	1.000005
96000.0	13.2	-47.8	-0. **	20.4	584.6	82.2	19.2	1.000005
96500.0	12.9	-47.6	-0. **	19.9	584.8	83.3	17.8	1.000004
97000.0	12.6	-47.4	-0. **	19.4	585.0	83.2	18.2	1.000004
97500.0	12.3	-47.3	-0. **	19.0	585.2	83.2	18.5	1.000004
98000.0	12.0	-47.1	-0. **	18.5	585.4	83.3	18.0	1.000004
98500.0	11.7	-46.9	-0. **	18.1	585.6	83.8	16.2	1.000004
99000.0	11.5	-46.7	-0. **	17.7	586.0	84.3	14.5	1.000004
99500.0	11.2	-45.7	-0. **	17.2	587.2	83.4	13.2	1.000004
100000.0	11.0	-44.7	-0. **	16.7	588.5	81.4	12.2	1.000004
100500.0	10.7	-43.8	-0. **	16.3	589.7	79.5	11.2	1.000004
101000.0	10.5	-42.8	-0. **	15.9	591.0	74.8	11.6	1.000004
101500.0	10.3	-41.8	-0. **	15.4	592.3	68.9	12.5	1.000003
102000.0	10.0	-40.8	-0. **	15.0	593.5	63.1	13.4	1.000003
102500.0	9.8	-40.7	-0. **	14.7	593.6	61.6	14.4	1.000003
103000.0	9.6	-40.7	-0. **	14.4	593.6	61.1	15.5	1.000003
103500.0	9.4	-40.8	-0. **	14.1	593.6	60.7	16.5	1.000003
104000.0	9.2	-40.8	-0. **	13.8	593.5	59.6	18.0	1.000003
104500.0	9.0	-40.8	-0. **	13.5	593.5	58.5	19.5	1.000003
105000.0	8.8	-40.8	-0. **	13.2	593.5	57.4	21.1	1.000003
105500.0	8.6	-40.9	-0. **	12.9	593.4			1.000003
106000.0	8.4	-40.9	-0. **	12.6	593.4			1.000003
106500.0	8.2	-40.9	-0. **	12.3	593.4			1.000003
107000.0	8.0	-40.9	-0. **	12.1	593.4			1.000003
107500.0	7.9	-41.0	-0. **	11.8	593.3			1.000003
108000.0	7.7	-41.0	-0. **	11.5	593.3			1.000003

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
24 JAN. 67 1100 HRS MSY
ASCENSION NO. 47

UPPER AIR DATA
0091003903
WHITE SANDS SITE
TABLE VII

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND		WIND DATA		INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT CENTIGRADE			KNOTS	KNOTS	DIRECTION DEGREES(TN)	SPEED KNOTS	
3989.0	881.7	10.2	-6.6	30.0	1082.4	656.0	160.0	160.0	4.1	1.000259
4000.0	881.3	10.2	-6.6	30.0	1082.1	655.9	160.5	160.5	4.1	1.000259
4500.0	865.2	8.7	-7.7	30.5	1068.0	654.2	182.3	182.3	6.0	1.000254
5000.0	849.3	7.2	-8.8	31.1	1054.0	652.4	204.1	204.1	7.9	1.000250
5500.0	833.8	5.7	-9.9	31.6	1040.2	650.7	225.8	225.8	9.8	1.000246
6000.0	818.4	4.5	-10.9	31.7	1025.8	649.2	247.6	247.6	11.7	1.000242
6500.0	803.1	3.8	-11.9	30.9	1009.3	648.3	267.8	267.8	13.6	1.000237
7000.0	788.1	3.0	-12.9	30.1	993.2	647.5	266.2	266.2	17.1	1.000233
7500.0	773.4	2.3	-13.9	29.2	977.3	646.6	264.6	264.6	20.5	1.000228
8000.0	759.0	1.6	-14.8	28.4	961.6	645.7	262.2	262.2	23.9	1.000224
8500.0	744.8	0.9	-15.8	27.5	946.2	644.8	259.9	259.9	27.4	1.000220
9000.0	730.9	0.6	-16.6	26.3	929.3	644.6	257.5	257.5	28.9	1.000215
9500.0	717.2	1.3	-17.0	24.3	909.7	645.3	255.2	255.2	30.3	1.000211
10000.0	703.7	1.0	-17.0	24.8	893.6	645.0	256.7	256.7	30.5	1.000207
10500.0	690.5	0.5	-16.9	25.8	878.4	644.4	258.2	258.2	30.6	1.000204
11000.0	677.5	-0.5	-16.5	28.9	865.0	643.2	260.1	260.1	30.1	1.000201
11500.0	664.7	-1.6	-16.0	32.5	852.2	641.9	262.0	262.0	29.9	1.000199
12000.0	652.1	-1.4	-15.7	33.0	835.4	642.2	263.3	263.3	30.5	1.000195
12500.0	639.8	-1.2	-15.6	32.8	818.8	642.5	263.9	263.9	31.4	1.000192
13000.0	627.7	-1.8	-16.5	31.6	805.1	641.8	261.9	261.9	33.7	1.000188
13500.0	615.7	-2.6	-17.7	30.4	792.1	640.7	260.1	260.1	35.6	1.000184
14000.0	603.7	-3.8	-19.3	29.1	780.2	639.3	258.8	258.8	36.5	1.000181
14500.0	591.9	-5.0	-20.8	27.8	768.4	637.9	257.7	257.7	37.5	1.000177
15000.0	580.4	-6.1	-22.4	26.5	756.8	636.5	257.5	257.5	38.8	1.000174
15500.0	569.1	-7.3	-24.0	25.2	745.4	635.0	257.4	257.4	39.9	1.000171
16000.0	558.0	-8.5	-25.6	23.8	734.2	633.6	258.0	258.0	40.6	1.000168
16500.0	547.1	-9.7	-27.2	22.5	723.2	632.2	258.5	258.5	41.2	1.000165
17000.0	536.4	-10.9	-28.9	21.2	712.3	630.7	258.9	258.9	41.4	1.000162
17500.0	526.0	-12.0	-30.6	19.9	701.6	629.3	259.1	259.1	41.6	1.000159
18000.0	515.8	-13.2	-32.3	18.6	691.1	627.9	259.1	259.1	41.9	1.000156

UPPER AIR DATA
0091003903
WHITE SANDS SITE
TABLE VII (Cont)

STATION ALTITUDE 3989.0 FEET MSL
24 JAN. 67 1100 HRS MST
ASCENSION NO. 47

WSTN SITE COORDINATES
E 488.188 MET
N 1887.045 MET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CM ³ METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
18500.0	505.7	-14.4	17.2	680.7	626.4	259.1	42.1	1.000154
19000.0	495.9	-15.6	15.9	670.6	625.0	258.7	41.4	1.000151
19500.0	486.1	-16.8	15.6	660.4	623.5	258.3	40.7	1.000149
20000.0	476.3	-18.0	17.5	650.1	622.1	257.5	40.5	1.000146
20500.0	466.6	-19.2	19.5	640.0	620.6	256.7	40.3	1.000144
21000.0	457.2	-20.4	21.4	630.1	619.1	256.3	39.9	1.000142
21500.0	447.9	-21.6	23.4	620.3	617.6	256.0	39.3	1.000140
22000.0	438.8	-22.7	29.0	610.3	616.3	255.6	39.6	1.000138
22500.0	429.8	-23.8	36.4	600.4	614.9	255.2	40.3	1.000136
23000.0	420.8	-25.1	38.8	590.9	613.4	254.1	40.7	1.000133
23500.0	412.1	-26.4	40.7	581.6	611.7	252.7	41.1	1.000131
24000.0	403.5	-27.7	42.6	572.5	610.1	251.0	41.5	1.000129
24500.0	395.1	-29.0	44.5	563.6	608.5	249.3	42.0	1.000127
25000.0	386.8	-30.2	40.1	554.6	606.9	247.9	42.1	1.000125
25500.0	378.6	-31.5	33.5	545.8	605.3	246.5	42.3	1.000123
26000.0	370.4	-32.9	35.0	537.1	603.6	246.3	43.0	1.000120
26500.0	362.5	-34.2	37.1	528.5	601.9	246.1	43.5	1.000119
27000.0	354.6	-35.6	39.2	520.2	600.1	246.1	43.6	1.000117
27500.0	347.0	-37.0	41.3	511.9	598.4	246.4	44.3	1.000115
28000.0	339.5	-38.3	43.7	503.6	596.7	247.6	44.3	1.000113
28500.0	332.1	-39.3	47.4	494.7	595.4	248.3	48.2	1.000111
29000.0	324.8	-40.3	51.1	486.0	594.1	249.3	50.1	1.000109
29500.0	317.6	-41.5	51.2	477.5	592.7	250.0	52.1	1.000107
30000.0	310.5	-42.6	50.2	469.2	591.2	250.8	54.0	1.000105
30500.0	303.6	-43.7	49.2	461.1	589.8	251.1	54.8	1.000103
31000.0	296.6	-45.1	46.0**	453.1	588.1	251.3	55.2	1.000101
31500.0	289.7	-46.5	42.0**	445.3	586.3	252.2	56.8	1.000099
32000.0	283.0	-47.9	38.0**	437.7	584.4	253.4	58.8	1.000098
32500.0	276.4	-49.3	34.0**	430.2	582.6	254.4	58.1	1.000096
33000.0	270.0	-50.7	30.1**	422.9	580.8	255.3	57.1	1.000094

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

UPPER AIR DATA
0091003903
WHITE SANDS SITE
TABLE VII (Cont.)

STATION ALTITUDE 3989.0 FEET MSL
24 JAN. 67 1100 HRS MST
ASCENSION NO. 47

WSTM SITE COORDINATES
E 408,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CM ³ MEYER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
33500.0	263.7	-52.1	26.1**	415.7	570.9	255.2	59.2	1.000093
34000.0	257.6	-53.5	22.1**	408.6	577.1	255.2	59.2	1.000091
34500.0	251.6	-54.9	18.1**	401.7	575.3	254.9	56.9	1.000089
35000.0	245.8	-56.3	14.2**	394.9	573.4	254.6	54.9	1.000088
35500.0	240.1	-57.7	10.2**	388.2	571.5	254.7	54.5	1.000086
36000.0	234.5	-59.1	6.2**	381.7	569.7	255.2	54.4	1.000085
36500.0	229.0	-60.5	2.2**	375.3	567.8	257.0	54.8	1.000084
37000.0	223.6	-61.4	-0. **	367.9	566.6	258.2	54.5	1.000082
37500.0	218.2	-61.7	-0. **	359.4	566.3	258.8	53.5	1.000080
38000.0	212.9	-61.9	-0. **	351.1	565.9	258.2	53.4	1.000078
38500.0	207.7	-62.1	-0. **	343.0	565.6	255.8	54.8	1.000076
39000.0	202.7	-62.4	-0. **	335.0	565.3	252.9	55.6	1.000075
39500.0	197.7	-62.6	-0. **	327.3	564.9	248.3	53.7	1.000073
40000.0	192.9	-62.9	-0. **	319.7	564.6	245.8	51.9	1.000071
40500.0	188.3	-63.2	-0. **	312.5	564.1	241.0	52.9	1.000070
41000.0	183.6	-64.1	-0. **	306.1	563.0	238.1	54.0	1.000068
41500.0	179.1	-65.0	-0. **	299.8	561.8	241.9	55.8	1.000067
42000.0	174.7	-65.8	-0. **	293.6	560.8	243.7	57.5	1.000065
42500.0	170.5	-64.9	-0. **	285.2	561.9	250.8	59.9	1.000064
43000.0	166.3	-64.1	-0. **	277.1	563.0	251.9	62.4	1.000062
43500.0	162.2	-63.2	-0. **	269.3	564.2	258.4	62.3	1.000060
44000.0	158.3	-62.4	-0. **	261.6	565.3	260.5	61.9	1.000058
44500.0	154.4	-62.4	-0. **	255.2	565.3	259.8	59.9	1.000057
45000.0	150.6	-62.8	-0. **	249.5	564.8	257.9	57.2	1.000056
45500.0	147.0	-63.2	-0. **	243.8	564.3	255.8	54.0	1.000054
46000.0	143.4	-63.6	-0. **	238.4	563.7	253.5	56.0	1.000053
46500.0	139.9	-63.9	-0. **	233.0	563.2	252.1	56.2	1.000052
47000.0	136.5	-64.3	-0. **	227.7	562.7	252.6	56.9	1.000051
47500.0	133.1	-64.0	-0. **	221.8	563.2	253.2	57.5	1.000049
48000.0	129.9	-63.4	-0. **	215.8	563.9	254.6	56.8	1.000048

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE HAS BEEN USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
24 JAN. 67 1100 HRS MST
ASCENSION NO. 47

UPPER AIR DATA
0091003903
WHITE SANDS SITE
TABLE VII (Cont)

WSYM SITE COORDINATES
N 400,560 FEET
W 109,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND		WIND DATA		INDEX OF REFRACTION
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE			KNOTS	KNOTS	DIRECTION DEGREES (TN)	SPEED KNOTS	
48500.0	126.7	-62.5	0.	-0. **	209.6	545.1	256.0	256.0	56.1	1.000047
49000.0	123.7	-61.6	0.	-0. **	203.6	564.4	256.1	256.1	54.5	1.000045
49500.0	120.7	-62.0	0.	-0. **	199.1	565.8	255.4	255.4	52.7	1.000044
50000.0	117.7	-62.5	0.	-0. **	194.7	565.1	255.4	255.4	51.2	1.000043
50500.0	114.9	-63.0	0.	-0. **	190.4	564.5	255.4	255.4	50.4	1.000042
51000.0	112.1	-63.2	0.	-0. **	186.0	564.2	255.3	255.3	49.6	1.000041
51500.0	109.4	-63.0	0.	-0. **	181.3	564.5	252.6	252.6	48.3	1.000040
52000.0	106.7	-62.7	0.	-0. **	176.7	564.8	249.7	249.7	40.8	1.000039
52500.0	104.1	-62.5	0.	-0. **	172.2	565.1	247.6	247.6	36.8	1.000038
53000.0	101.6	-62.3	0.	-0. **	167.8	565.5	245.8	245.8	38.0	1.000037
53500.0	99.1	-62.0	0.	-0. **	163.6	565.9	240.4	240.4	31.0	1.000036
54000.0	96.7	-61.8	0.	-0. **	159.4	566.1	231.4	231.4	30.9	1.000035
54500.0	94.4	-61.8	0.	-0. **	155.6	566.1	225.4	225.4	31.4	1.000035
55000.0	92.1	-61.9	0.	-0. **	151.9	566.0	228.9	228.9	33.6	1.000034
55500.0	89.9	-62.0	0.	-0. **	148.3	565.8	232.4	232.4	35.7	1.000033
56000.0	87.7	-62.1	0.	-0. **	144.8	565.7	235.4	235.4	37.3	1.000032
56500.0	85.6	-62.2	0.	-0. **	141.3	565.5	238.4	238.4	38.7	1.000031
57000.0	83.5	-62.2	0.	-0. **	137.9	565.5	241.7	241.7	39.9	1.000031
57500.0	81.5	-61.8	0.	-0. **	134.3	566.1	245.4	245.4	40.4	1.000030
58000.0	79.5	-61.3	0.	-0. **	130.8	566.7	249.1	249.1	41.4	1.000029
58500.0	77.6	-60.9	0.	-0. **	127.4	567.3	248.0	248.0	42.5	1.000028
59000.0	75.7	-60.5	0.	-0. **	124.1	567.9	246.5	246.5	43.5	1.000028
59500.0	73.9	-60.6	0.	-0. **	121.2	567.6	244.6	244.6	43.5	1.000027
60000.0	72.1	-61.2	0.	-0. **	118.6	566.8	242.0	242.0	42.2	1.000026
60500.0	70.4	-61.8	0.	-0. **	116.0	566.1	239.4	239.4	40.8	1.000026
61000.0	68.7	-62.4	0.	-0. **	113.5	565.3	238.7	238.7	35.7	1.000025
61500.0	67.0	-62.9	0.	-0. **	111.1	564.5	238.2	238.2	30.3	1.000025
62000.0	65.4	-62.8	0.	-0. **	108.3	564.8	236.4	236.4	26.0	1.000024
62500.0	63.8	-61.5	0.	-0. **	105.0	566.4	232.7	232.7	23.6	1.000023
63000.0	62.3	-61.8	0.	-0. **	102.6	566.1	229.0	229.0	21.1	1.000023

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
24 JAN. 67 1100 HRS MST
ASCENSION NO. 47

UPPER AIR DATA
0091003903
WHITE SANDS SITE
TABLE VII (Cont)

WSM SITE COORDINATES
E 480,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL-HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
63500.0	60.7	-62.1	-0.00	100.3	565.7	223.8	16.6	1.000022
64000.0	59.3	-62.3	-0.00	98.0	565.4	218.4	11.9	1.000022
64500.0	57.8	-62.6	-0.00	95.7	565.0	215.2	10.2	1.000021
65000.0	56.4	-62.8	-0.00	93.5	564.7	214.4	11.9	1.000021
65500.0	55.1	-63.1	-0.00	91.3	564.3	213.9	13.5	1.000020
66000.0	53.7	-62.8	-0.00	89.0	564.7	222.6	11.9	1.000020
66500.0	52.4	-62.5	-0.00	86.7	565.2	231.3	10.3	1.000019
67000.0	51.2	-62.1	-0.00	84.5	565.6	235.0	11.1	1.000019
67500.0	49.9	-61.5	-0.00	82.2	566.4	233.5	13.5	1.000018
68000.0	48.7	-60.9	-0.00	80.0	567.3	237.2	14.4	1.000018
68500.0	47.6	-60.2	-0.00	77.9	568.2	243.8	9.3	1.000017
69000.0	46.4	-59.6	-0.00	75.8	569.0	250.5	4.1	1.000017
69500.0	45.3	-58.9	-0.00	73.7	569.9	238.6	2.9	1.000016
70000.0	44.2	-58.3	-0.00	71.8	570.7	222.5	2.5	1.000016
70500.0	43.2	-57.6	-0.00	69.8	571.6	187.8	3.1	1.000016
71000.0	42.2	-57.0	-0.00	68.0	572.5	128.8	6.9	1.000015
71500.0	41.2	-56.8	-0.00	66.3	572.7	73.1	6.6	1.000015
72000.0	40.2	-56.8	-0.00	64.7	572.8	120.5	5.2	1.000014
72500.0	39.2	-56.7	-0.00	63.2	572.9	167.8	3.7	1.000014
73000.0	38.3	-56.6	-0.00	61.7	573.0	160.6	4.7	1.000014
73500.0	37.4	-56.2	-0.00	60.1	573.5	116.8	7.4	1.000013
74000.0	36.5	-55.7	-0.00	58.5	574.2	73.1	10.1	1.000013
74500.0	35.7	-55.1	-0.00	57.0	574.9	68.3	9.6	1.000013
75000.0	34.8	-54.6	-0.00	55.5	575.7	64.9	8.9	1.000012
75500.0	34.0	-54.0	-0.00	54.1	576.4	62.5	8.3	1.000012
76000.0	33.2	-53.8	-0.00	52.8	576.6	65.8	7.6	1.000012
76500.0	32.5	-53.7	-0.00	51.6	576.9	69.2	7.0	1.000011
77000.0	31.7	-53.5	-0.00	50.3	577.1	73.5	6.4	1.000011
77500.0	31.0	-53.3	-0.00	49.1	577.3	79.9	5.6	1.000011
78000.0	30.3	-53.2	-0.00	48.0	577.5	86.3	4.9	1.000011

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

UPPER AIR DATA
0091003903
WHITE SANDS SITE
TABLE VII (Cont)

STATION ALTITUDE 3989.0 FEET MSL
24 JAN. 67 1100 HRS MST
ASCENSION NO. 47

WSTM SITE COORDINATES
E 488.380 FEET
M 185.045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	DIRECTION DEGREES(TM)	SPEED KNOTS	INDEX OF REFRACTION
78500.0	29.6	-53.0	-0.00	46.8	577.7	102.7	4.4	1.000010
79000.0	28.9	-52.9	-0.00	45.7	577.9	130.5	4.4	1.000010
79500.0	28.2	-52.7	-0.00	44.6	578.2	138.3	4.3	1.000010
80000.0	27.6	-52.5	-0.00	43.5	578.4	149.9	5.2	1.000010
80500.0	26.9	-52.4	-0.00	42.5	578.6	118.9	6.7	1.000009
81000.0	26.3	-52.2	-0.00	41.5	578.8	87.9	8.3	1.000009
81500.0	25.7	-52.0	-0.00	40.5	579.0	80.0	9.7	1.000009
82000.0	25.1	-51.9	-0.00	39.5	579.2	78.9	11.0	1.000009
82500.0	24.5	-51.7	-0.00	38.6	579.4	77.9	12.4	1.000009
83000.0	24.0	-51.5	-0.00	37.7	579.7	75.8	13.9	1.000008
83500.0	23.4	-51.4	-0.00	36.8	579.9	73.5	15.4	1.000008
84000.0	22.9	-51.2	-0.00	35.9	580.1	71.2	16.8	1.000008
84500.0	22.3	-51.0	-0.00	35.0	580.3	69.0	18.1	1.000008
85000.0	21.8	-50.9	-0.00	34.2	580.5	66.8	19.5	1.000008
85500.0	21.3	-50.7	-0.00	33.4	580.7	64.9	13.5	1.000007
86000.0	20.8	-50.5	-0.00	32.6	580.9	64.5	12.1	1.000007
86500.0	20.4	-50.4	-0.00	31.8	581.1	64.1	11.4	1.000007
87000.0	19.9	-50.3	-0.00	31.1	581.3	63.8	10.8	1.000007
87500.0	19.4	-50.1	-0.00	30.4	581.5	63.9	10.3	1.000007
88000.0	19.0	-50.0	-0.00	29.7	581.7	63.9	10.4	1.000007
88500.0	18.6	-49.8	-0.00	29.0	581.9	65.9	11.1	1.000006
89000.0	18.1	-49.7	-0.00	28.3	582.1	70.3	12.6	1.000006
89500.0	17.7	-49.5	-0.00	27.6	582.3	74.7	14.1	1.000006
90000.0	17.3	-49.4	-0.00	27.0	582.4	76.7	15.0	1.000006
90500.0	16.9	-49.3	-0.00	26.3	582.6	76.5	15.4	1.000006
91000.0	16.5	-49.1	-0.00	25.7	582.8	76.4	15.8	1.000006
91500.0	16.2	-49.0	-0.00	25.1	583.0	76.7	17.3	1.000006
92000.0	15.8	-48.8	-0.00	24.5	583.2	77.4	19.5	1.000005
92500.0	15.4	-48.7	-0.00	24.0	583.4	78.1	21.8	1.000005
93000.0	15.1	-48.5	-0.00	23.4	583.6	77.5	21.4	1.000005

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
 24 JAN. 67 1100 HRS MST
 ASCENSION NO. 47

UPPER AIR DATA
 0091003903
 WHITE SANDS SITE
 TABLE VII (Cont)

WSTM SITE COORDINATES
 E 488,580 FEET
 N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND		WIND DATA		INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT CENTIGRADE			KNOTS	KNOTS	DIRECTION DEGREES(TN)	SPEED KNOTS	
93500.0	14.7	-48.4	0.	-0. **	22.9	583.8		76.5	20.3	1.000005
94000.0	14.4	-48.2	0.	-0. **	22.3	583.9		75.5	19.1	1.000005
94500.0	14.1	-48.1	0.	-0. **	21.8	584.1		76.5	19.1	1.000005
95000.0	13.8	-48.0	0.	-0. **	21.3	584.3		77.7	19.3	1.000005
95500.0	13.4	-47.8	0.	-0. **	20.8	584.5		79.0	19.4	1.000005
96000.0	13.1	-47.7	0.	-0. **	20.3	584.7		76.5	17.8	1.000005
96500.0	12.8	-47.1	0.	-0. **	19.8	585.5		73.9	16.1	1.000004
97000.0	12.6	-46.1	0.	-0. **	19.3	586.7		71.2	14.4	1.000004
97500.0	12.3	-45.1	0.	-0. **	18.8	588.0		69.0	13.4	1.000004
98000.0	12.0	-44.1	0.	-0. **	18.3	589.3		66.8	12.4	1.000004
98500.0	11.7	-44.1	0.	-0. **	17.8	589.3		63.6	11.2	1.000004
99000.0	11.5	-44.1	0.	-0. **	17.5	589.3		49.8	8.5	1.000004
99500.0	11.2	-44.1	0.	-0. **	17.1	589.3		36.0	5.7	1.000004
100000.0	11.0	-44.1	0.	-0. **	16.7	589.4		22.3	2.9	1.000004
100500.0	10.7	-44.0	0.	-0. **	16.3	589.4		2.4	2.2	1.000004
101000.0	10.5	-44.0	0.	-0. **	15.9	589.4		336.7	3.4	1.000004
101500.0	10.3	-44.0	0.	-0. **	15.6	589.4		311.0	4.5	1.000003
102000.0	10.0	-44.0	0.	-0. **	15.2	589.4		285.3	5.7	1.000003
102500.0	9.8	-44.0	0.	-0. **	14.9	589.4		259.5	6.9	1.000003
103000.0	9.6	-44.0	0.	-0. **	14.6	589.4				1.000003
103500.0	9.4	-44.0	0.	-0. **	14.2	589.5				1.000003
104000.0	9.2	-44.0	0.	-0. **	13.9	589.5				1.000003
104500.0	9.0	-44.0	0.	-0. **	13.6	589.5				1.000003
105000.0	8.8	-43.9	0.	-0. **	13.3	589.5				1.000003
105500.0	8.6	-43.9	0.	-0. **	13.0	589.5				1.000003
106000.0	8.4	-43.9	0.	-0. **	12.7	589.5				1.000003
106500.0	8.2	-43.9	0.	-0. **	12.4	589.5				1.000003
107000.0	8.0	-43.9	0.	-0. **	12.2	589.6				1.000003

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

RELEASE TIME (MST)		SECOND-STAGE IMPACT DISPLACEMENT IN MILES DUE TO WIND								AZI- MUTH (DEG- DEGREES)	THEORETICAL IMPACT FROM LAUNCHER (IN MILES)								
		11-216 FT				216-4000 FT								4000-72168 FT				TOTAL	
		N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W					N-S	E-W	N-S	E-W		
RAWIN- SONDE	PIBAL	0840	0900	13.2N	1.6E	14.1N	4.5W	6.0S	16.4W		21.3N	19.3W	354.8	81.4	81.1N	7.4W			
0840	0915	14.4N	5.7E	17.2N	4.4W	6.0S	16.4W	26.5N	15.1W	357.9	86.4	86.3N	3.2W						
0840	0930	14.5N	3.6E	12.7N	4.1W	6.0S	16.4W	21.2N	16.9W	356.5	81.2	81.0N	5.0W						
0840	1000	12.6N	3.6E	12.1N	1.1W	6.0S	16.4W	18.7N	13.9W	358.5	78.5	78.3N	2.0W						
0840	1015	7.5N	4.8E	8.5N	1.9W	6.0S	16.4W	10.0N	13.5W	358.7	69.8	69.8N	1.6W						
0840	1030	4.1N	0.0	8.1N	3.5W	6.0S	16.4W	6.2N	19.9W	353.1	66.5	66.0N	8.0W						
0840	1040	2.0N	3.6E	5.3N	1.8W	6.0S	16.4W	1.3N	14.6W	357.5	61.2	61.1N	2.7W						
0840	1050	0.0	0.0	1.0N	1.3W	6.0S	16.4W	5.0S	17.7W	353.9	54.8	54.5N	5.8W						
1100	1100	0.0	0.0	1.2S	0.0	7.5S	20.1W	8.7S	20.1W	350.9	51.8	51.1N	8.2W						

LAUNCHER SETTING (ELEVATION 85.5 DEGREES QE) NO WIND IMPACT PREDICTED SECOND-STAGE IMPACT SECOND-STAGE IMPACT, RADAR TRACK PREDICTED BOOSTER IMPACT ACTUAL BOOSTER IMPACT	AZIMUTH (DEG- REES)		MILES FROM LAUNCHER	
	RANGE	N-S	E-W	
	62.0	59.8N	16.5E	
	60.9	59.8N	11.9E	
	58.0	58.0N	1.0W	
	45.0	44.8N	3.9W	
	2.1	2.0N	0.6E	
	N/A	N/A	N/A	

TABLE VIII. IMPACT PREDICTION DATA
NIKE-HYDAC STV (SR-46)

RELEASE TIME (MST)		SECOND-STAGE IMPACT DISPLACEMENT IN MILES DUE TO WIND										AZI- MUTH (DEG- FEET)	THEORETICAL IMPACT FROM LAUNCHER (IN MILES)		
		11-216 FT		216-4000 FT		4000-72168 FT									
		RAWIN- SONDE	PITBAL	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W		N-S	E-W	RANGE
1100	1145		0.0	0.0	2.7S	2.5W	7.5S	20.1W	10.2S	22.6W	352.8	75.6	75.0N	9.4W	
1100	1215		1.9S	0.0	3.4S	4.2W	7.5S	20.1W	12.8S	24.3W	351.3	73.2	72.4N	11.1W	
1100	1230		5.6S	1.7E	2.7S	5.0W	7.5S	20.1W	15.8S	23.4W	351.6	70.1	69.4N	10.2W	
1100	1245		7.2S	3.1W	5.0S	1.1E	7.5S	20.1W	19.7S	22.1W	352.3	66.2	65.5N	8.9W	
1100	1255		5.3S	1.6E	2.1S	0.9W	7.5S	20.1W	14.9S	19.4W	355.0	70.6	70.3N	6.3W	
1100	1305		3.0S	1.6E	4.9S	3.3E	7.5S	20.1W	15.4S	15.2W	358.4	70.5	69.8N	2.0W	
1100	1315		3.6S	5.6E	2.4S	1.5E	7.5S	20.1W	13.5S	13.0W	359.8	71.7	71.7N	0.2E	
1100	1320		7.4S	5.4E	0.6S	0.7E	7.5S	20.1W	15.5S	14.0W	359.3	69.7	69.7N	0.8W	
1100	1329		3.0S	3.0E	2.8S	1.8E	7.5S	20.1W	13.3S	15.3W	358.3	71.9	71.9N	2.1W	

LAUNCHER SETTING (ELEVATION 83.7 DEGREES QE) NO WIND IMPACT PREDICTED SECOND-STAGE IMPACT SECOND-STAGE IMPACT, RADAR TRACK PREDICTED BOOSTER IMPACT ACTUAL BOOSTER IMPACT	AZIMUTH (DEG- DEES)		MILES FROM LAUNCHER		
	RERS		RANGE	N-S	E-W
	011.8		87.1	85.2N	17.8E
	008.9		86.4	85.2N	13.2E
	358.6		70.0	70.0N	2.0W
	008.0		91.8	90.9N	12.8E
	016.0		1.8	1.7N	0.5E
	N/A		N/A	N/A	N/A

TABLE IX. IMPACT PREDICTION DATA
NIKE-HYDAC (SR-47)

UNCLASSIFIED

Security Classification

DOCUMENT CONTROL DATA - R&D		
(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)		
1. ORIGINATING ACTIVITY (Corporate Author)		2a. REPORT SECURITY CLASSIFICATION
U.S. Army Electronics Command Fort Monmouth, New Jersey		UNCLASSIFIED
		2b. GROUP
3. REPORT TITLE		
METEOROLOGICAL DATA REPORT, NIKE-HYDAC STV (SR-46 & 47)		
4. DESCRIPTIVE NOTES (Type of report and inclusive dates)		
5. AUTHOR(S) (Last name, first name, initial)		
SHARPE, John M.		
6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
February 1967	25	None
8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S)	
a. PROJECT NO.	DR-155	
c. DA Task IV650212A127-02	9b. OTHER REPORT NO.(S) (Any other numbers that may be assigned this report)	
d.		
10. AVAILABILITY/LIMITATION NOTICE		
Distribution of this document is unlimited.		
11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY	
	U.S. Army Electronics Command Atmospheric Sciences Laboratory White Sands Missile Range, New Mexico	
13. ABSTRACT		
<p>Meteorological data gathered for the launching of two (2) Nike-Hydac STV (SR-46 & 47) are presented for the Ballistic Systems Division, U.S. Air Force and for ballistic studies. The data appear, along with calculated ballistic data, in tabular form.</p>		

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1 JAN 64UNCLASSIFIED
Security Classification

UNCLASSIFIED
Security Classification

KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
1. Ballistics 2. Winds 3. Meteorology						

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KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
1. Ballistics						
2. Winds						
3. Meteorology						

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